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Acoustic sensing method based on the inverse problem of recovering the density profile and the bulk modulus of the inhomogeneous medium

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Abstract

© Published under licence by IOP Publishing Ltd. The model of inhomogeneous acoustic medium without loss in dimensional approximation based on the Riccati equation for the impedance of the medium is considered. The inverse operator problem of recovering the coefficients of the Riccati equation is formulated. The numerical algorithm for solving the problem based on the integral equation coupling input acoustic impedance or admittance to the distributions of density or bulk modulus of the medium is proposed. The method of acoustic scanning is proposed. The numerical simulation of the proposed algorithm is carried out.

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